

# SEQUENCE LISTING

<110> Sternberg, Paul W.  
Barr, Maureen M.

<120> POLYCYSTIC KIDNEY DISEASE GENE HOMOLOGS REQUIRED FOR MALE MATING  
BEHAVIOR IN NEMATODES AND ASSAYS BASED THEREON

<130> 18021-2901

<140> Unassigned

<141> 2000-01-06

<150> 60/115,127

<151> 1999-01-06

<160> 16

<170> PatentIn Ver. 2.0

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<211> 12912  
<212> DNA  
<213> Homo sapiens PKD-1 gene

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cac ttg gtc acc atg acg gca ggg aac ccg ctg ggc tca gcc aac gcc His Leu Val Thr Met Thr Ala Gly Asn Pro Leu Gly Ser Ala Asn Ala	1780	1785	1790	5376
acc gtg gaa gtg gat gtg cag gtg cct gtg agt ggc ctc agc atc agg Thr Val Glu Val Asp Val Gln Val Pro Val Ser Gly Leu Ser Ile Arg	1795	1800	1805	5424
gcc agc gag ccc gga ggc agc ttc gtg gcg gcc ggg tcc tct gtg ccc Ala Ser Glu Pro Gly Gly Ser Phe Val Ala Ala Gly Ser Ser Val Pro	1810	1815	1820	5472
ttt tgg ggg cag ctg gcc acg ggc acc aat gtg agc tgg tgc tgg gct Phe Trp Gly Gln Leu Ala Thr Gly Thr Asn Val Ser Trp Cys Trp Ala	1825	1830	1835	5520
gtg ccc ggc ggc agc agc aag cgt ggc cct cat gtc acc atg gtc ttc Val Pro Gly Gly Ser Ser Lys Arg Gly Pro His Val Thr Met Val Phe	1845	1850	1855	5568
ccg gat gct ggc acc ttc tcc atc cgg ctc aat gcc tcc aac gca gtc Pro Asp Ala Gly Thr Phe Ser Ile Arg Leu Asn Ala Ser Asn Ala Val	1860	1865	1870	5616
agc tgg gtc tca gcc acg tac aac ctc acg gcg gag gag ccc atc gtg Ser Trp Val Ser Ala Thr Tyr Asn Leu Thr Ala Glu Glu Pro Ile Val	1875	1880	1885	5664
ggc ctg gtg ctg tgg gcc agc agc aag gtg gtg gcg ccc ggg cag ctg Gly Leu Val Leu Trp Ala Ser Ser Lys Val Val Ala Pro Gly Gln Leu	1890	1895	1900	5712
gtc cat ttt cag atc ctg ctg gct gcc ggc tca gct gtc acc ttc cgc Val His Phe Gln Ile Leu Leu Ala Ala Gly Ser Ala Val Thr Phe Arg	1905	1910	1915	5760
cta cag gtc ggc ggg gcc aac ccc gag gtg ctc ccc ggg ccc cgt ttc Leu Gln Val Gly Gly Ala Asn Pro Glu Val Leu Pro Gly Pro Arg Phe	1925	1930	1935	5808
tcc cac agc ttc ccc cgc gtc gga gac cac gtg gtg agc gtg cgg ggc Ser His Ser Phe Pro Arg Val Gly Asp His Val Val Ser Val Arg Gly	1940	1945	1950	5856
aaa aac cac gtg agc tgg gcc cag gcg cag gtg cgc atc gtg gtg ctg Lys Asn His Val Ser Trp Ala Gln Ala Gln Val Arg Ile Val Val Leu	1955	1960	1965	5904
gag gcc gtg agt ggg ctg cag gtg ccc aac tgc tgc gag cct ggc atc Glu Ala Val Ser Gly Leu Gln Val Pro Asn Cys Cys Glu Pro Gly Ile	1970	1975	1980	5952
gcc acg ggc act gag agg aac ttc aca gcc cgc gtg cag cgc ggc tct Ala Thr Gly Thr Glu Arg Asn Phe Thr Ala Arg Val Gln Arg Gly Ser	1985	1990	1995	6000
cgg gtc gcc tac gcc tgg tac ttc tcg ctg cag aag gtc cag ggc gac Arg Val Ala Tyr Ala Trp Tyr Phe Ser Leu Gln Lys Val Gln Gly Asp	2005	2010	2015	6048
tcg ctg gtc atc ctg tcg ggc cgc gac gtc acc tac acg ccc gtg gcc				6096



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Ser Leu Val Ile Leu Ser Gly Arg Asp Val Thr Tyr Thr Pro Val Ala	
2020 2025 2030	
gcg ggg ctg ttg gag atc cag gtg cgc gcc ttc aac gcc ctg ggc agt	6144
Ala Gly Leu Leu Glu Ile Gln Val Arg Ala Phe Asn Ala Leu Gly Ser	
2035 2040 2045	
gag aac cgc acg ctg gtg ctg gag gtt cag gac gcc gtc cag tat gtg	6192
Glu Asn Arg Thr Leu Val Leu Glu Val Gln Asp Ala Val Gln Tyr Val	
2050 2055 2060	
gcc ctg cag agc ggc ccc tgc ttc acc aac cgc tcg gcg cag ttt gag	6240
Ala Leu Gln Ser Gly Pro Cys Phe Thr Asn Arg Ser Ala Gln Phe Glu	
2065 2070 2075 2080	
gcc gcc acc agc ccc agc ccc cgg cgt gtg gcc tac cac tgg gac ttt	6288
Ala Ala Thr Ser Pro Ser Pro Arg Arg Val Ala Tyr His Trp Asp Phe	
2085 2090 2095	
ggg gat ggg tcg cca ggg cag gac aca gat gag ccc agg gcc gag cac	6336
Gly Asp Gly Ser Pro Gly Gln Asp Thr Asp Glu Pro Arg Ala Glu His	
2100 2105 2110	
tcc tac ctg agg cct ggg gac tac cgc gtg cag gtg aac gcc tcc aac	6384
Ser Tyr Leu Arg Pro Gly Asp Tyr Arg Val Gln Val Asn Ala Ser Asn	
2115 2120 2125	
ctg gtg agc ttc ttc gtg gcg cag gcc acg gtg acc gtc cag gtg ctg	6432
Leu Val Ser Phe Phe Val Ala Gln Ala Thr Val Thr Val Gln Val Leu	
2130 2135 2140	
gcc tgc cgg gag ccg gag gtg gac gtg gtc ctg ccc ctg cag gtg ctg	6480
Ala Cys Arg Glu Pro Glu Val Asp Val Val Leu Pro Leu Gln Val Leu	
2145 2150 2155 2160	
atg cgg cga tca cag cgc aac tac ttg gag gcc cac gtt gac ctg cgc	6528
Met Arg Arg Ser Gln Arg Asn Tyr Leu Glu Ala His Val Asp Leu Arg	
2165 2170 2175	
gac tgc gtc acc tac cag act gag tac cgc tgg gag gtg tat cgc acc	6576
Asp Cys Val Thr Tyr Gln Thr Glu Tyr Arg Trp Glu Val Tyr Arg Thr	
2180 2185 2190	
gcc agc tgc cag cgg ccg ggg cgc cca gcg cgt gtg gcc ctg ccc ggc	6624
Ala Ser Cys Gln Arg Pro Gly Arg Pro Ala Arg Val Ala Leu Pro Gly	
2195 2200 2205	
gtg gac gtg agc cgg cct cgg ctg gtg ctg ccg cgg ctg gcg ctg cct	6672
Val Asp Val Ser Arg Pro Arg Leu Val Leu Pro Arg Leu Ala Leu Pro	
2210 2215 2220	
gtg ggg cac tac tgc ttt gtg ttt gtc gtg tca ttt ggg gac acg cca	6720
Val Gly His Tyr Cys Phe Val Phe Val Val Ser Phe Gly Asp Thr Pro	
2225 2230 2235 2240	
ctg aca cag agc atc cag gcc aat gtg acg gtg gcc ccc gag cgc ctg	6768
Leu Thr Gln Ser Ile Gln Ala Asn Val Thr Val Ala Pro Glu Arg Leu	
2245 2250 2255	
gtg ccc atc att gag ggt ggc tca tac cgc gtg tgg tca gac aca cgg	6816
Val Pro Ile Ile Glu Gly Gly Ser Tyr Arg Val Trp Ser Asp Thr Arg	
2260 2265 2270	
gac ctg gtg ctg gat ggg agc gag tcc tac gac ccc aac ctg gag gac	6864
Asp Leu Val Leu Asp Gly Ser Glu Ser Tyr Asp Pro Asn Leu Glu Asp	
2275 2280 2285	

ggc gac cag acg ccg ctc agt ttc cac tgg gcc tgt gtg gct tcg aca Gly Asp Gln Thr Pro Leu Ser Phe His Trp Ala Cys Val Ala Ser Thr 2290 2295 2300	6912
cag agg gag gct ggc ggg tgt gcg ctg aac ttt ggg ccc cgc ggg agc Gln Arg Glu Ala Gly Gly Cys Ala Leu Asn Phe Gly Pro Arg Gly Ser 2305 2310 2315 2320	6960
agc acg gtc acc att cca cgg gag cgg ctg gcg gct ggc gtg gag tac Ser Thr Val Thr Ile Pro Arg Glu Arg Leu Ala Ala Gly Val Glu Tyr 2325 2330 2335	7008
acc ttc agc ctg acc gtg tgg aag gcc ggc cgc aag gag gag gcc acc Thr Phe Ser Leu Thr Val Trp Lys Ala Gly Arg Lys Glu Glu Ala Thr 2340 2345 2350	7056
aac cag acg gtg ctg atc cgg agt ggc cgg gtg ccc att gtg tcc ttg Asn Gln Thr Val Leu Ile Arg Ser Gly Arg Val Pro Ile Val Ser Leu 2355 2360 2365	7104
gag tgt gtg tcc tgc aag gca cag gcc gtg tac gaa gtg agc cgc agc Glu Cys Val Ser Cys Lys Ala Gln Ala Val Tyr Glu Val Ser Arg Ser 2370 2375 2380	7152
tcc tac gtg tac ttg gag ggc cgc tgc ctc aat tgc agc agc ggc tcc Ser Tyr Val Tyr Leu Glu Gly Arg Cys Leu Asn Cys Ser Ser Gly Ser 2385 2390 2395 2400	7200
aag cga ggg cgg tgg gct gca cgt acg ttc agc aac aag acg ctg gtg Lys Arg Gly Arg Trp Ala Ala Arg Thr Phe Ser Asn Lys Thr Leu Val 2405 2410 2415	7248
ctg gat gag acc acc aca tcc acg ggc agt gca ggc atg cga ctg gtg Leu Asp Glu Thr Thr Ser Thr Gly Ser Ala Gly Met Arg Leu Val 2420 2425 2430	7296
ctg cgg cgg ggc gtg ctg cgg gac ggc gag gga tac acc ttc acg ctc Leu Arg Arg Gly Val Leu Arg Asp Gly Glu Gly Tyr Thr Phe Thr Leu 2435 2440 2445	7344
acg gtg ctg ggc cgc tct ggc gag gag gag ggc tgc gcc tcc atc cgc Thr Val Leu Gly Arg Ser Gly Glu Glu Glu Gly Cys Ala Ser Ile Arg 2450 2455 2460	7392
ctg tcc ccc aac cgc ccg ccg ctg ggg ggc tct tgc cgc ctc ttc cca Leu Ser Pro Asn Arg Pro Pro Leu Gly Gly Ser Cys Arg Leu Phe Pro 2465 2470 2475 2480	7440
ctg ggc gct gtg cac gcc ctc acc acc aag gtg cac ttc gaa tgc acg Leu Gly Ala Val His Ala Leu Thr Thr Lys Val His Phe Glu Cys Thr 2485 2490 2495	7488
ggc tgg cat gac gcg gag gat gct ggc gcc ccg ctg gtg tac gcc ctg Gly Trp His Asp Ala Glu Asp Ala Gly Ala Pro Leu Val Tyr Ala Leu 2500 2505 2510	7536
ctg ctg cgg cgc tgt cgc cag ggc cac tgc gag gag ttc tgt gtc tac Leu Leu Arg Arg Cys Arg Gln Gly His Cys Glu Glu Phe Cys Val Tyr 2515 2520 2525	7584
aag ggc agc ctc tcc agc tac gga gcc gtg ctg ccc ccg ggt ttc agg Lys Gly Ser Leu Ser Ser Tyr Gly Ala Val Leu Pro Pro Gly Phe Arg 2530 2535 2540	7632
cca cac ttc gag gtg ggc ctg gcc gtg gtg gtg cag gac cag ctg gga Pro His Phe Glu Val Gly Leu Ala Val Val Val Gln Asp Gln Leu Gly 2545 2550 2555 2560	7680

gcc gct gtg gtc gcc ctc aac agg tct ttg gcc atc acc ctc cca gag Ala Ala Val Val Ala Leu Asn Arg Ser Leu Ala Ile Thr Leu Pro Glu 2565 2570 2575	7728
ccc aac ggc agc gca acg ggg ctc aca gtc tgg ctg cac ggg ctc acc Pro Asn Gly Ser Ala Thr Gly Leu Thr Val Trp Leu His Gly Leu Thr 2580 2585 2590	7776
gct agt gtg ctc cca ggg ctg ctg cgg cag gcc gat ccc cag cac gtc Ala Ser Val Leu Pro Gly Leu Leu Arg Gln Ala Asp Pro Gln His Val 2595 2600 2605	7824
atc gag tac tcg ttg gcc ctg gtc acc gtg ctg aac gag tac gag cgg Ile Glu Tyr Ser Leu Ala Leu Val Thr Val Leu Asn Glu Tyr Glu Arg 2610 2615 2620	7872
gcc ctg gac gtg gcg gca gag ccc aag cac gag cgg cag cac cga gcc Ala Leu Asp Val Ala Ala Glu Pro Lys His Glu Arg Gln His Arg Ala 2625 2630 2635 2640	7920
cag ata cgc aag aac atc acg gag act ctg gtg tcc ctg agg gtc cac Gln Ile Arg Lys Asn Ile Thr Glu Thr Leu Val Ser Leu Arg Val His 2645 2650 2655	7968
act gtg gat gac atc cag cag atc gct gct gcg ctg gcc cag tgc atg Thr Val Asp Asp Ile Gln Gln Ile Ala Ala Ala Leu Ala Gln Cys Met 2660 2665 2670	8016
ggg ccc agc agg gag ctc gta tgc cgc tcg tgc ctg aag cag acg ctg Gly Pro Ser Arg Glu Leu Val Cys Arg Ser Cys Leu Lys Gln Thr Leu 2675 2680 2685	8064
cac aag ctg gag gcc atg atg ctc atc ctg cag gca gag acc acc gcg His Lys Leu Glu Ala Met Met Leu Ile Leu Gln Ala Glu Thr Thr Ala 2690 2695 2700	8112
ggc acc gtg acg ccc acc gcc atc gga gac agc atc ctc aac atc aca Gly Thr Val Thr Pro Thr Ala Ile Gly Asp Ser Ile Leu Asn Ile Thr 2705 2710 2715 2720	8160
gga gac ctc atc cac ctg gcc agc tcg gac gtg cgg gca cca cag ccc Gly Asp Leu Ile His Leu Ala Ser Ser Asp Val Arg Ala Pro Gln Pro 2725 2730 2735	8208
tca gag ctg gga gcc gag tca cca tct cgg atg gtg gcg tcc cag gcc Ser Glu Leu Gly Ala Glu Ser Pro Ser Arg Met Val Ala Ser Gln Ala 2740 2745 2750	8256
tac aac ctg acc tct gcc ctc atg cgc atc ctc atg cgc tcc cgc gtg Tyr Asn Leu Thr Ser Ala Leu Met Arg Ile Leu Met Arg Ser Arg Val 2755 2760 2765	8304
ctc aac gag gag ccc ctg acg ctg gcg ggc gag gag atc gtg gcc cag Leu Asn Glu Glu Pro Leu Thr Leu Ala Gly Glu Glu Ile Val Ala Gln 2770 2775 2780	8352
ggc aag cgc tcg gac ccg cgg agc ctg ctg tgc tat ggc ggc gcc cca Gly Lys Arg Ser Asp Pro Arg Ser Leu Leu Cys Tyr Gly Gly Ala Pro 2785 2790 2795 2800	8400
ggg cct ggc tgc cac ttc tcc atc ccc gag gct ttc agc ggg gcc ctg Gly Pro Gly Cys His Phe Ser Ile Pro Glu Ala Phe Ser Gly Ala Leu 2805 2810 2815	8448
gcc aac ctc agt gac gtg gtg cag ctc atc ttt ctg gtg gac tcc aat Ala Asn Leu Ser Asp Val Val Gln Leu Ile Phe Leu Val Asp Ser Asn	8496

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2820	2825	2830	
ccc ttt ccc ttt ggc tat atc agc aac tac acc gtc tcc acc aag gtg Pro Phe Pro Phe Gly Tyr Ile Ser Asn Tyr Thr Val Ser Thr Lys Val 2835 2840 2845			8544
gcc tcg atg gca ttc cag aca cag gcc ggc gcc cag atc ccc atc gag Ala Ser Met Ala Phe Gln Thr Gln Ala Gly Ala Gln Ile Pro Ile Glu 2850 2855 2860			8592
cgg ctg gcc tca gag cgc gcc atc acc gtg aag gtg ccc aac aac tcg Arg Leu Ala Ser Glu Arg Ala Ile Thr Val Lys Val Pro Asn Asn Ser 2865 2870 2875 2880			8640
gac tgg gct gcc cgg ggc cac cgc agc tcc gcc aac tcc gcc aac tcc Asp Trp Ala Ala Arg Gly His Arg Ser Ser Ala Asn Ser Ala Asn Ser 2885 2890 2895			8688
gtt gtg gtc cag ccc cag gcc tcc gtc ggt gct gtg gtc acc ctg gac Val Val Val Gln Pro Gln Ala Ser Val Gly Ala Val Val Thr Leu Asp 2900 2905 2910			8736
agc agc aac cct gcg gcc ggg ctg cat ctg cag ctc aac tat acg ctg Ser Ser Asn Pro Ala Ala Gly Leu His Leu Gln Leu Asn Tyr Thr Leu 2915 2920 2925			8784
ctg gac ggc cac tac ctg tct gag gaa cct gag ccc tac ctg gca gtc Leu Asp Gly His Tyr Leu Ser Glu Glu Pro Glu Pro Tyr Leu Ala Val 2930 2935 2940			8832
tac cta cac tcg gag ccc cgg ccc aat gag cac aac tgc tcg gct agc Tyr Leu His Ser Glu Pro Arg Pro Asn Glu His Asn Cys Ser Ala Ser 2945 2950 2955 2960			8880
agg agg atc cgc cca gag tca ctc cag ggt gct gac cac cgg ccc tac Arg Arg Ile Arg Pro Glu Ser Leu Gln Gly Ala Asp His Arg Pro Tyr 2965 2970 2975			8928
acc ttc ttc att tcc ccg ggg agc aga gac cca gcg ggg agt tac cat Thr Phe Phe Ile Ser Pro Gly Ser Arg Asp Pro Ala Gly Ser Tyr His 2980 2985 2990			8976
ctg aac ctc tcc agc cac ttc cgc tgg tcg gcg ctg cag gtg tcc gtg Leu Asn Leu Ser Ser His Phe Arg Trp Ser Ala Leu Gln Val Ser Val 2995 3000 3005			9024
ggc ctg tac acg tcc ctg tgc cag tac ttc agc gag gag gac atg gtg Gly Leu Tyr Thr Ser Leu Cys Gln Tyr Phe Ser Glu Glu Asp Met Val 3010 3015 3020			9072
tgg cgg aca gag ggg ctg ctg ccc ctg gag gag acc tcg ccc cgc cag Trp Arg Thr Glu Gly Leu Leu Pro Leu Glu Glu Thr Ser Pro Arg Gln 3025 3030 3035 3040			9120
gcc gtc tgc ctc acc cgc cac ctc acc gcc ttc ggc gcc agc ctc ttc Ala Val Cys Leu Thr Arg His Leu Thr Ala Phe Gly Ala Ser Leu Phe 3045 3050 3055			9168
gtg ccc cca agc cat gtc cgc ttt gtg ttt cct gag ccg aca gcg gat Val Pro Pro Ser His Val Arg Phe Val Phe Pro Glu Pro Thr Ala Asp 3060 3065 3070			9216
gta aac tac atc gtc atg ctg aca tgt gct gtg tgc ctg gtg acc tac Val Asn Tyr Ile Val Met Leu Thr Cys Ala Val Cys Leu Val Thr Tyr 3075 3080 3085			9264
atg gtc atg gcc gcc atc ctg cac aag ctg gac cag ttg gat gcc agc			9312

Met Val Met Ala Ala Ile Leu His Lys Leu Asp Gln Leu Asp Ala Ser	
3090 3095 3100	
cgg ggc cgc gcc atc cct ttc tgt ggg cag cgg ggc cgc ttc aag tac	9360
Arg Gly Arg Ala Ile Pro Phe Cys Gly Gln Arg Gly Arg Phe Lys Tyr	
3105 3110 3115 3120	
gag atc ctc gtc aag aca ggc tgg ggc cgg ggc tca ggt acc acg gcc	9408
Glu Ile Leu Val Lys Thr Gly Trp Gly Arg Gly Ser Gly Thr Thr Ala	
3125 3130 3135	
cac gtg ggc atc atg ctg tat ggg gtg gac agc cgg agc ggc cac cgg	9456
His Val Gly Ile Met Leu Tyr Gly Val Asp Ser Arg Ser Gly His Arg	
3140 3145 3150	
cac ctg gac ggc gac aga gcc ttc cac cgc aac agc ctg gac atc ttc	9504
His Leu Asp Gly Asp Arg Ala Phe His Arg Asn Ser Leu Asp Ile Phe	
3155 3160 3165	
cgg atc gcc acc ccg cac agc ctg ggt agc gtg tgg aag atc cga gtg	9552
Arg Ile Ala Thr Pro His Ser Leu Gly Ser Val Trp Lys Ile Arg Val	
3170 3175 3180	
tgg cac gac aac aaa ggg ctc agc cct gcc tgg ttc ctg cag cac gtc	9600
Trp His Asp Asn Lys Gly Leu Ser Pro Ala Trp Phe Leu Gln His Val	
3185 3190 3195 3200	
atc gtc agg gac ctg cag acg gca cgc agc gcc ttc ttc ctg gtc aat	9648
Ile Val Arg Asp Leu Gln Thr Ala Arg Ser Ala Phe Phe Leu Val Asn	
3205 3210 3215	
gac tgg ctt tcg gtg gag acg gag gcc aac ggg ggc ctg gtg gag aag	9696
Asp Trp Leu Ser Val Glu Thr Glu Ala Asn Gly Gly Leu Val Glu Lys	
3220 3225 3230	
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Glu Val Leu Ala Ala Ser Asp Ala Ala Leu Leu Arg Phe Arg Arg Leu	
3235 3240 3245	
ctg gtg gct gag ctg cag cgt ggc ttc ttt gac aag cac atc tgg ctc	9792
Leu Val Ala Glu Leu Gln Arg Gly Phe Phe Asp Lys His Ile Trp Leu	
3250 3255 3260	
tcc ata tgg gac cgg ccg cct cgt agc cgt ttc act cgc atc cag agg	9840
Ser Ile Trp Asp Arg Pro Pro Arg Ser Arg Phe Thr Arg Ile Gln Arg	
3265 3270 3275 3280	
gcc acc tgc tgc gtt ctc ctc atc tgc ctc ttc ctg ggc gcc aac gcc	9888
Ala Thr Cys Cys Val Leu Leu Ile Cys Leu Phe Leu Gly Ala Asn Ala	
3285 3290 3295	
gtg tgg tac ggg gct gtt ggc gac tct gcc tac agc acg ggg cat gtg	9936
Val Trp Tyr Gly Ala Val Gly Asp Ser Ala Tyr Ser Thr Gly His Val	
3300 3305 3310	
tcc agg ctg agc ccg ctg agc gtc gac aca gtc gct gtt ggc ctg gtg	9984
Ser Arg Leu Ser Pro Leu Ser Val Asp Thr Val Ala Val Gly Leu Val	
3315 3320 3325	
tcc agc gtg gtt gtc tat ccc gtc tac ctg gcc atc ctt ttt ctc ttc	10032
Ser Ser Val Val Val Tyr Pro Val Tyr Leu Ala Ile Leu Phe Leu Phe	
3330 3335 3340	
cgg atg tcc cgg agc aag gtg gct ggg agc ccg agc ccc aca cct gcc	10080
Arg Met Ser Arg Ser Lys Val Ala Gly Ser Pro Ser Pro Thr Pro Ala	
3345 3350 3355 3360	

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ggg cag cag gtg ctg gac atc gac agc tgc ctg gac tgc tcc gtg ctg Gly Gln Gln Val Leu Asp Ile Asp Ser Cys Leu Asp Ser Ser Val Leu 3365 3370 3375	10128
gac agc tcc ttc ctc acg ttc tca ggc ctc cac gct gag cag gcc ttt Asp Ser Ser Phe Leu Thr Phe Ser Gly Leu His Ala Glu Gln Ala Phe 3380 3385 3390	10176
gtt gga cag atg aag agt gac ttg ttt ctg gat gat tct aag agt ctg Val Gly Gln Met Lys Ser Asp Leu Phe Leu Asp Asp Ser Lys Ser Leu 3395 3400 3405	10224
gtg tgc tgg ccc tcc ggc gag gga acg ctc agt tgg ccg gac ctg ctc Val Cys Trp Pro Ser Gly Glu Gly Thr Leu Ser Trp Pro Asp Leu Leu 3410 3415 3420	10272
agt gac ccg tcc att gtg ggt agc aat ctg cgg cag ctg gca cgg ggc Ser Asp Pro Ser Ile Val Gly Ser Asn Leu Arg Gln Leu Ala Arg Gly 3425 3430 3435 3440	10320
cag gcg ggc cat ggg ctg ggc cca gag gag gac ggc ttc tcc ctg gcc Gln Ala Gly His Gly Leu Gly Pro Glu Glu Asp Gly Phe Ser Leu Ala 3445 3450 3455	10368
agc ccc tac tgc cct gcc aaa tcc ttc tca gca tca gat gaa gac ctg Ser Pro Tyr Ser Pro Ala Lys Ser Phe Ser Ala Ser Asp Glu Asp Leu 3460 3465 3470	10416
atc cag cag gtc ctt gcc gag ggg gtc agc agc cca gcc cct acc caa Ile Gln Gln Val Leu Ala Glu Gly Val Ser Ser Pro Ala Pro Thr Gln 3475 3480 3485	10464
gac acc cac atg gaa acg gac ctg ctc agc agc ctg tcc agc act cct Asp Thr His Met Glu Thr Asp Leu Leu Ser Ser Leu Ser Ser Thr Pro 3490 3495 3500	10512
ggg gag aag aca gag acg ctg gcg ctg cag agg ctg ggg gag ctg ggg Gly Glu Lys Thr Glu Thr Leu Ala Leu Gln Arg Leu Gly Glu Leu Gly 3505 3510 3515 3520	10560
cca ccc agc cca ggc ctg aac tgg gaa cag ccc cag gca gcg agg ctg Pro Pro Ser Pro Gly Leu Asn Trp Glu Gln Pro Gln Ala Ala Arg Leu 3525 3530 3535	10608
tcc agg aca gga ctg gtg gag ggt ctg cgg aag cgc ctg ctg ccg gcc Ser Arg Thr Gly Leu Val Glu Gly Leu Arg Lys Arg Leu Leu Pro Ala 3540 3545 3550	10656
tgg tgt gcc tcc ctg gcc cac ggg ctc agc ctg ctc ctg gtg gct gtg Trp Cys Ala Ser Leu Ala His Gly Leu Ser Leu Leu Val Ala Val 3555 3560 3565	10704
gct gtg gct gtc tca ggg tgg gtg ggt gcg agc ttc ccc ccg ggc gtg Ala Val Ala Val Ser Gly Trp Val Gly Ala Ser Phe Pro Pro Gly Val 3570 3575 3580	10752
agt gtt gcg tgg ctc ctg tcc agc agc gcc agc ttc ctg gcc tca ttc Ser Val Ala Trp Leu Leu Ser Ser Ser Ala Ser Phe Leu Ala Ser Phe 3585 3590 3595 3600	10800
ctc ggc tgg gag cca ctg aag gtc ttg ctg gaa gcc ctg tac ttc tca Leu Gly Trp Glu Pro Leu Lys Val Leu Leu Glu Ala Leu Tyr Phe Ser 3605 3610 3615	10848
ctg gtg gcc aag ccg ctg cac ccg gat gaa gat gac acc ctg gta gag Leu Val Ala Lys Arg Leu His Pro Asp Glu Asp Asp Thr Leu Val Glu 3620 3625 3630	10896

agc ccg gct gtg acg cct gtg agc gca cgt gtg ccc cgc gta cgg cca 10944  
 Ser Pro Ala Val Thr Pro Val Ser Ala Arg Val Pro Arg Val Arg Pro  
 3635 3640 3645  
 ccc cac ggc ttt gca ctc ttc ctg gcc aag gaa gaa gcc cgc aag gtc 10992  
 Pro His Gly Phe Ala Leu Phe Leu Ala Lys Glu Glu Ala Arg Lys Val  
 3650 3655 3660  
 aag agg cta cat ggc atg ctg cgg agc ctc ctg gtg tac atg ctt ttt 11040  
 Lys Arg Leu His Gly Met Leu Arg Ser Leu Leu Val Tyr Met Leu Phe  
 3665 3670 3675 3680  
 ctg ctg gtg acc ctg ctg gcc agc tat ggg gat gcc tca tgc cat ggg 11088  
 Leu Leu Val Thr Leu Leu Ala Ser Tyr Gly Asp Ala Ser Cys His Gly  
 3685 3690 3695  
 cac gcc tac cgt ctg caa agc gcc atc aag cag gag ctg cac agc cgg 11136  
 His Ala Tyr Arg Leu Gln Ser Ala Ile Lys Gln Glu Leu His Ser Arg  
 3700 3705 3710  
 gcc ttc ctg gcc atc acg cgg tct gag gag ctc tgg cca tgg atg gcc 11184  
 Ala Phe Leu Ala Ile Thr Arg Ser Glu Glu Leu Trp Pro Trp Met Ala  
 3715 3720 3725  
 cac gtg ctg ctg ccc tac gtc cac ggg aac cag tcc agc cca gag ctg 11232  
 His Val Leu Leu Pro Tyr Val His Gly Asn Gln Ser Ser Pro Glu Leu  
 3730 3735 3740  
 ggg ccc cca cgg ctg cgg cag gtg cgg ctg cag gaa gca ctc tac cca 11280  
 Gly Pro Pro Arg Leu Arg Gln Val Arg Leu Gln Glu Ala Leu Tyr Pro  
 3745 3750 3755 3760  
 gac cct ccc ggc ccc agg gtc cac acg tgc tgc gcc gca gga ggc ttc 11328  
 Asp Pro Pro Gly Pro Arg Val His Thr Cys Ser Ala Ala Gly Gly Phe  
 3765 3770 3775  
 agc acc agc gat tac gac gtt ggc tgg gag agt cct cac aat ggc tgc 11376  
 Ser Thr Ser Asp Tyr Asp Val Gly Trp Glu Ser Pro His Asn Gly Ser  
 3780 3785 3790  
 ggg acg tgg gcc tat tca gcg ccg gat ctg ctg ggg gca tgg tcc tgg 11424  
 Gly Thr Trp Ala Tyr Ser Ala Pro Asp Leu Leu Gly Ala Trp Ser Trp  
 3795 3800 3805  
 ggc tcc tgt gcc gtg tat gac agc ggg ggc tac gtg cag gag ctg ggc 11472  
 Gly Ser Cys Ala Val Tyr Asp Ser Gly Gly Tyr Val Gln Glu Leu Gly  
 3810 3815 3820  
 ctg agc ctg gag gag agc cgc gac cgg ctg cgc ttc ctg cag ctg cac 11520  
 Leu Ser Leu Glu Glu Ser Arg Asp Arg Leu Arg Phe Leu Gln Leu His  
 3825 3830 3835 3840  
 aac tgg ctg gac aac agg agc cgc gct gtg ttc ctg gag ctc acg cgc 11568  
 Asn Trp Leu Asp Asn Arg Ser Arg Ala Val Phe Leu Glu Leu Thr Arg  
 3845 3850 3855  
 tac agc ccg gcc gtg ggg ctg cac gcc gcc gtc acg ctg cgc ctc gag 11616  
 Tyr Ser Pro Ala Val Gly Leu His Ala Ala Val Thr Leu Arg Leu Glu  
 3860 3865 3870  
 ttc ccg gcg gcc ggc cgc gcc ctg gcc gcc ctc agc gtc cgc ccc ttt 11664  
 Phe Pro Ala Ala Gly Arg Ala Leu Ala Ala Leu Ser Val Arg Pro Phe  
 3875 3880 3885  
 gcg ctg cgc cgc ctc agc gcg ggc ctc tgc ctg cct ctg ctc acc tgc 11712  
 Ala Leu Arg Arg Leu Ser Ala Gly Leu Ser Leu Pro Leu Leu Thr Ser

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3890	3895	3900	
gtg tgc ctg ctg ctg ttc gcc gtg cac ttc gcc gtg gcc gag gcc cgt Val Cys Leu Leu Leu Phe Ala Val His Phe Ala Val Ala Glu Ala Arg 3905 3910 3915 3920			11760
act tgg cac agg gaa ggg cgc tgg cgc gtg ctg cgg ctc gga gcc tgg Thr Trp His Arg Glu Gly Arg Trp Arg Val Leu Arg Leu Gly Ala Trp 3925 3930 3935			11808
gcg cgg tgg ctg ctg gtg gcg ctg acg gcg gcc acg gca ctg gta cgc Ala Arg Trp Leu Leu Val Ala Leu Thr Ala Ala Thr Ala Leu Val Arg 3940 3945 3950			11856
ctc gcc cag ctg ggt gcc gct gac cgc cag tgg acc cgt ttc gtg cgc Leu Ala Gln Leu Gly Ala Ala Asp Arg Gln Trp Thr Arg Phe Val Arg 3955 3960 3965			11904
ggc cgc ccg cgc cgc ttc act agc ttc gac cag gtg gcg cac gtg agc Gly Arg Pro Arg Arg Phe Thr Ser Phe Asp Gln Val Ala His Val Ser 3970 3975 3980			11952
tcc gca gcc cgt ggc ctg gcg gcc tcg ctg ctc ttc ctg ctt ttg gtc Ser Ala Ala Arg Gly Leu Ala Ala Ser Leu Leu Phe Leu Leu Leu Val 3985 3990 3995 4000			12000
aag gct gcc cag cac gta cgc ttc gtg cgc cag tgg tcc gtc ttt ggc Lys Ala Ala Gln His Val Arg Phe Val Arg Gln Trp Ser Val Phe Gly 4005 4010 4015			12048
aag aca tta tgc cga gct ctg cca gag ctc ctg ggg gtc acc ttg ggc Lys Thr Leu Cys Arg Ala Leu Pro Glu Leu Leu Gly Val Thr Leu Gly 4020 4025 4030			12096
ctg gtg gtg ctc ggg gta gcc tac gcc cag ctg gcc atc ctg ctc gtg Leu Val Val Leu Gly Val Ala Tyr Ala Gln Leu Ala Ile Leu Leu Val 4035 4040 4045			12144
tct tcc tgt gtg gac tcc ctc tgg agc gtg gcc cag gcc ctg ttg gtg Ser Ser Cys Val Asp Ser Leu Trp Ser Val Ala Gln Ala Leu Leu Val 4050 4055 4060			12192
ctg tgc cct ggg act ggg ctc tct acc ctg tgt cct gcc gag tcc tgg Leu Cys Pro Gly Thr Gly Leu Ser Thr Leu Cys Pro Ala Glu Ser Trp 4065 4070 4075 4080			12240
cac ctg tca ccc ctg ctg tgt gtg ggg ctc tgg gca ctg cgg ctg tgg His Leu Ser Pro Leu Leu Cys Val Gly Leu Trp Ala Leu Arg Leu Trp 4085 4090 4095			12288
ggc gcc cta cgg ctg ggg gct gtt att ctc cgc tgg cgc tac cac gcc Gly Ala Leu Arg Leu Gly Ala Val Ile Leu Arg Trp Arg Tyr His Ala 4100 4105 4110			12336
ttg cgt gga gag ctg tac cgg ccg gcc tgg gag ccc cag gac tac gag Leu Arg Gly Glu Leu Tyr Arg Pro Ala Trp Glu Pro Gln Asp Tyr Glu 4115 4120 4125			12384
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aag gtc aag gag ttc cgc cac aaa gtc cgc ttt gaa ggg atg gag ccg Lys Val Lys Glu Phe Arg His Lys Val Arg Phe Glu Gly Met Glu Pro 4145 4150 4155 4160			12480
ctg ccc tct cgc tcc tcc agg ggc tcc aag gta tcc ccg gat gtg ccc			12528



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Leu Pro Ser Arg Ser Ser Arg Gly Ser Lys Val Ser Pro Asp Val Pro  
4165 4170 4175

cca ccc agc gct ggc tcc gat gcc tcg cac ccc tcc acc tcc tcc agc 12576  
Pro Pro Ser Ala Gly Ser Asp Ala Ser His Pro Ser Thr Ser Ser Ser  
4180 4185 4190

cag ctg gat ggg ctg agc gtg agc ctg ggc cgg ctg ggg aca agg tgt 12624  
Gln Leu Asp Gly Leu Ser Val Ser Leu Gly Arg Leu Gly Thr Arg Cys  
4195 4200 4205

gag cct gag ccc tcc cgc ctg caa gcc gtg ttc gag gcc ctg ctg acc 12672  
Glu Pro Glu Pro Ser Arg Leu Gln Ala Val Phe Glu Ala Leu Leu Thr  
4210 4215 4220

cag ttt gac cga ctg aac cag gcc aca gag gac gtc tac cag ctg gag 12720  
Gln Phe Asp Arg Leu Asn Gln Ala Thr Glu Asp Val Tyr Gln Leu Glu  
4225 4230 4235 4240

cag cag ctg cac agc ctg caa ggc cgc agg agc agc cgg gcg ccc gcc 12768  
Gln Gln Leu His Ser Leu Gln Gly Arg Arg Ser Ser Arg Ala Pro Ala  
4245 4250 4255

gga tct tcc cgt ggc cca tcc ccg ggc ctg cgg cca gca ctg ccc agc 12816  
Gly Ser Ser Arg Gly Pro Ser Pro Gly Leu Arg Pro Ala Leu Pro Ser  
4260 4265 4270

cgc ctt gcc cgg gcc agt cgg ggt gtg gac ctg gcc act ggc ccc agc 12864  
Arg Leu Ala Arg Ala Ser Arg Gly Val Asp Leu Ala Thr Gly Pro Ser  
4275 4280 4285

agg aca ccc ctt cgg gcc aag aac aag gtc cac ccc agc agc act tag 12912  
Arg Thr Pro Leu Arg Ala Lys Asn Lys Val His Pro Ser Ser Thr  
4290 4295 4300

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<211> 4303  
<212> PRT  
<213> Homo sapiens PKD-1 protein

<400> 2  
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Leu Trp Leu Gly Ala Leu Ala Gly Gly Pro Gly Arg Gly Cys Gly Pro  
20 25 30

Cys Glu Pro Pro Cys Leu Cys Gly Pro Ala Pro Gly Ala Ala Cys Arg  
35 40 45

Val Asn Cys Ser Gly Arg Gly Leu Arg Thr Leu Gly Pro Ala Leu Arg  
50 55 60

Ile Pro Ala Asp Ala Thr Glu Leu Asp Val Ser His Asn Leu Leu Arg  
65 70 75 80

Ala Leu Asp Val Gly Leu Leu Ala Asn Leu Ser Ala Leu Ala Glu Leu  
85 90 95

Asp Ile Ser Asn Asn Lys Ile Ser Thr Leu Glu Glu Gly Ile Phe Ala  
100 105 110

Asn Leu Phe Asn Leu Ser Glu Ile Asn Leu Ser Gly Asn Pro Phe Glu  
115 120 125

Cys Asp Cys Gly Leu Ala Trp Leu Pro Gln Trp Ala Glu Glu Gln Gln

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130	135	140
Val Arg Val Val Gln Pro Glu Ala Ala Thr Cys Ala Gly Pro Gly Ser 145 150 155 160		
Leu Ala Gly Gln Pro Leu Leu Gly Ile Pro Leu Leu Asp Ser Gly Cys 165 170 175		
Gly Glu Glu Tyr Val Ala Cys Leu Pro Asp Asn Ser Ser Gly Thr Val 180 185 190		
Ala Ala Val Ser Phe Ser Ala Ala His Glu Gly Leu Leu Gln Pro Glu 195 200 205		
Ala Cys Ser Ala Phe Cys Phe Ser Thr Gly Gln Gly Leu Ala Ala Leu 210 215 220		
Ser Glu Gln Gly Trp Cys Leu Cys Gly Ala Ala Gln Pro Ser Ser Ala 225 230 235 240		
Ser Phe Ala Cys Leu Ser Leu Cys Ser Gly Pro Pro Ala Pro Pro Ala 245 250 255		
Pro Thr Cys Arg Gly Pro Thr Leu Leu Gln His Val Phe Pro Ala Ser 260 265 270		
Pro Gly Ala Thr Leu Val Gly Pro His Gly Pro Leu Ala Ser Gly Gln 275 280 285		
Leu Ala Ala Phe His Ile Ala Ala Pro Leu Pro Val Thr Asp Thr Arg 290 295 300		
Trp Asp Phe Gly Asp Gly Ser Ala Glu Val Asp Ala Ala Gly Pro Ala 305 310 315 320		
Ala Ser His Arg Tyr Val Leu Pro Gly Arg Tyr His Val Thr Ala Val 325 330 335		
Leu Ala Leu Gly Ala Gly Ser Ala Leu Leu Gly Thr Asp Val Gln Val 340 345 350		
Glu Ala Ala Pro Ala Ala Leu Glu Leu Val Cys Pro Ser Ser Val Gln 355 360 365		
Ser Asp Glu Ser Leu Asp Leu Ser Ile Gln Asn Arg Gly Gly Ser Gly 370 375 380		
Leu Glu Ala Ala Tyr Ser Ile Val Ala Leu Gly Glu Glu Pro Ala Arg 385 390 395 400		
Ala Val His Pro Leu Cys Pro Ser Asp Thr Glu Ile Phe Pro Gly Asn 405 410 415		
Gly His Cys Tyr Arg Leu Val Val Glu Lys Ala Ala Trp Leu Gln Ala 420 425 430		
Gln Glu Gln Cys Gln Ala Trp Ala Gly Ala Ala Leu Ala Met Val Asp 435 440 445		
Ser Pro Ala Val Gln Arg Phe Leu Val Ser Arg Val Thr Arg Ser Leu 450 455 460		
Asp Val Trp Ile Gly Phe Ser Thr Val Gln Gly Val Glu Val Gly Pro 465 470 475 480		
Ala Pro Gln Gly Glu Ala Phe Ser Leu Glu Ser Cys Gln Asn Trp Leu 485 490 495		

Pro Gly Glu Pro His Pro Ala Thr Ala Glu His Cys Val Arg Leu Gly  
500 505 510

Pro Thr Gly Trp Cys Asn Thr Asp Leu Cys Ser Ala Pro His Ser Tyr  
515 520 525

Val Cys Glu Leu Gln Pro Gly Gly Pro Val Gln Asp Ala Glu Asn Leu  
530 535 540

Leu Val Gly Ala Pro Ser Gly Asp Leu Gln Gly Pro Leu Thr Pro Leu  
545 550 555 560

Ala Gln Gln Asp Gly Leu Ser Ala Pro His Glu Pro Val Glu Val Met  
565 570 575

Val Phe Pro Gly Leu Arg Leu Ser Arg Glu Ala Phe Leu Thr Thr Ala  
580 585 590

Glu Phe Gly Thr Gln Glu Leu Arg Arg Pro Ala Gln Leu Arg Leu Gln  
595 600 605

Val Tyr Arg Leu Leu Ser Thr Ala Gly Thr Pro Glu Asn Gly Ser Glu  
610 615 620

Pro Glu Ser Arg Ser Pro Asp Asn Arg Thr Gln Leu Ala Pro Ala Cys  
625 630 635 640

Met Pro Gly Gly Arg Trp Cys Pro Gly Ala Asn Ile Cys Leu Pro Leu  
645 650 655

Asp Ala Ser Cys His Pro Gln Ala Cys Ala Asn Gly Cys Thr Ser Gly  
660 665 670

Pro Gly Leu Pro Gly Ala Pro Tyr Ala Leu Trp Arg Glu Phe Leu Phe  
675 680 685

Ser Val Pro Ala Gly Pro Pro Ala Gln Tyr Ser Val Thr Leu His Gly  
690 695 700

Gln Asp Val Leu Met Leu Pro Gly Asp Leu Val Gly Leu Gln His Asp  
705 710 715 720

Ala Gly Pro Gly Ala Leu Leu His Cys Ser Pro Ala Pro Gly His Pro  
725 730 735

Gly Pro Arg Ala Pro Tyr Leu Ser Ala Asn Ala Ser Ser Trp Leu Pro  
740 745 750

His Leu Pro Ala Gln Leu Glu Gly Thr Trp Gly Cys Pro Ala Cys Ala  
755 760 765

Leu Arg Leu Leu Ala Gln Arg Glu Gln Leu Thr Val Leu Leu Gly Leu  
770 775 780

Arg Pro Asn Pro Gly Leu Arg Leu Pro Gly Arg Tyr Glu Val Arg Ala  
785 790 795 800

Glu Val Gly Asn Gly Val Ser Arg His Asn Leu Ser Cys Ser Phe Asp  
805 810 815

Val Val Ser Pro Val Ala Gly Leu Arg Val Ile Tyr Pro Ala Pro Arg  
820 825 830

Asp Gly Arg Leu Tyr Val Pro Thr Asn Gly Ser Ala Leu Val Leu Gln  
835 840 845

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Val Asp Ser Gly Ala Asn Ala Thr Ala Thr Ala Arg Trp Pro Gly Gly  
850 855 860

Ser Leu Ser Ala Arg Phe Glu Asn Val Cys Pro Ala Leu Val Ala Thr  
865 870 875 880

Phe Val Pro Ala Cys Pro Trp Glu Thr Asn Asp Thr Leu Phe Ser Val  
885 890 895

Val Ala Leu Pro Trp Leu Ser Glu Gly Glu His Val Val Asp Val Val  
900 905 910

Val Glu Asn Ser Ala Ser Arg Ala Asn Leu Ser Leu Arg Val Thr Ala  
915 920 925

Glu Glu Pro Ile Cys Gly Leu Arg Ala Thr Pro Ser Pro Glu Ala Arg  
930 935 940

Val Leu Gln Gly Val Leu Val Arg Tyr Ser Pro Val Val Glu Ala Gly  
945 950 955 960

Ser Asp Met Val Phe Arg Trp Thr Ile Asn Asp Lys Gln Ser Leu Thr  
965 970 975

Phe Gln Asn Val Val Phe Asn Val Ile Tyr Gln Ser Ala Ala Val Phe  
980 985 990

Lys Leu Ser Leu Thr Ala Ser Asn His Val Ser Asn Val Thr Val Asn  
995 1000 1005

Tyr Asn Val Thr Val Glu Arg Met Asn Arg Met Gln Gly Leu Gln Val  
1010 1015 1020

Ser Thr Val Pro Ala Val Leu Ser Pro Asn Ala Thr Leu Ala Leu Thr  
1025 1030 1035 1040

Ala Gly Val Leu Val Asp Ser Ala Val Glu Val Ala Phe Leu Trp Thr  
1045 1050 1055

Phe Gly Asp Gly Glu Gln Ala Leu His Gln Phe Gln Pro Pro Tyr Asn  
1060 1065 1070

Glu Ser Phe Pro Val Pro Asp Pro Ser Val Ala Gln Val Leu Val Glu  
1075 1080 1085

His Asn Val Thr His Thr Tyr Ala Ala Pro Gly Glu Tyr Leu Leu Thr  
1090 1095 1100

Val Leu Ala Ser Asn Ala Phe Glu Asn Leu Thr Gln Gln Val Pro Val  
1105 1110 1115 1120

Ser Val Arg Ala Ser Leu Pro Ser Val Ala Val Gly Val Ser Asp Gly  
1125 1130 1135

Val Leu Val Ala Gly Arg Pro Val Thr Phe Tyr Pro His Pro Leu Pro  
1140 1145 1150

Ser Pro Gly Gly Val Leu Tyr Thr Trp Asp Phe Gly Asp Gly Ser Pro  
1155 1160 1165

Val Leu Thr Gln Ser Gln Pro Ala Ala Asn His Thr Tyr Ala Ser Arg  
1170 1175 1180

Gly Thr Tyr His Val Arg Leu Glu Val Asn Asn Thr Val Ser Gly Ala  
185 1190 1195 1200

Ala Ala Gln Ala Asp Val Arg Val Phe Glu Glu Leu Arg Gly Leu Ser

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1205										1210										1215																																		
Val	Asp	Met	Ser	Leu	Ala	Val	Glu	Gln	Gly	Ala	Pro	Val	Val	Val	Ser																																							
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Ala	Ala	Val	Gln	Thr	Gly	Asp	Asn	Ile	Thr	Trp	Thr	Phe	Asp	Met	Gly																																							
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Asp	Gly	Thr	Val	Leu	Ser	Gly	Pro	Glu	Ala	Thr	Val	Glu	His	Val	Tyr																																							
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Leu	Arg	Ala	Gln	Asn	Cys	Thr	Val	Thr	Val	Gly	Ala	Gly	Ser	Pro	Ala																																							
			265						1270						1275																																							
Gly	His	Leu	Ala	Arg	Ser	Leu	His	Val	Leu	Val	Phe	Val	Leu	Glu	Val																																							
									1285						1290																																							
Leu	Arg	Val	Glu	Pro	Ala	Ala	Cys	Ile	Pro	Thr	Gln	Pro	Asp	Ala	Arg																																							
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Leu	Thr	Ala	Tyr	Val	Thr	Gly	Asn	Pro	Ala	His	Tyr	Leu	Phe	Asp	Trp																																							
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Thr	Phe	Gly	Asp	Gly	Ser	Ser	Asn	Thr	Thr	Val	Arg	Gly	Cys	Pro	Thr																																							
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Val	Thr	His	Asn	Phe	Thr	Arg	Ser	Gly	Thr	Phe	Pro	Leu	Ala	Leu	Val																																							
									1345						1350																																							
Leu	Ser	Ser	Arg	Val	Asn	Arg	Ala	His	Tyr	Phe	Thr	Ser	Ile	Cys	Val																																							
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Glu	Pro	Glu	Val	Gly	Asn	Val	Thr	Leu	Gln	Pro	Glu	Arg	Gln	Phe	Val																																							
									1380						1385																																							
Gln	Leu	Gly	Asp	Glu	Ala	Trp	Leu	Val	Ala	Cys	Ala	Trp	Pro	Pro	Phe																																							
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Pro	Tyr	Arg	Tyr	Thr	Trp	Asp	Phe	Gly	Thr	Glu	Glu	Ala	Ala	Pro	Thr																																							
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Arg	Ala	Arg	Gly	Pro	Glu	Val	Thr	Phe	Ile	Tyr	Arg	Asp	Pro	Gly	Ser																																							
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Tyr	Leu	Val	Thr	Val	Thr	Ala	Ser	Asn	Asn	Ile	Ser	Ala	Ala	Asn	Asp																																							
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Ser	Ala	Leu	Val	Glu	Val	Gln	Glu	Pro	Val	Leu	Val	Thr	Ser	Ile	Lys																																							
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Val	Asn	Gly	Ser	Leu	Gly	Leu	Glu	Leu	Gln	Gln	Pro	Tyr	Leu	Phe	Ser																																							
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Ala	Val	Gly	Arg	Gly	Arg	Pro	Ala	Ser	Tyr	Leu	Trp	Asp	Leu	Gly	Asp																																							
									1490						1495																																							
Gly	Gly	Trp	Leu	Glu	Gly	Pro	Glu	Val	Thr	His	Ala	Tyr	Asn	Ser	Thr																																							
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Gly	Asp	Phe	Thr	Val	Arg	Val	Ala	Gly	Trp	Asn	Glu	Val	Ser	Arg	Ser																																							
									1525						1530																																							
Glu	Ala	Trp	Leu	Asn	Val	Thr	Val	Lys	Arg	Arg	Val	Arg	Gly	Leu	Val																																							
									1540						1545																																							
Val	Asn	Ala	Ser	Arg	Thr	Val	Val	Pro	Leu	Asn	Gly	Ser	Val	Ser	Phe																																							
									1555						1560																																							

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Ser Thr Ser Leu Glu Ala Gly Ser Asp Val Arg Tyr Ser Trp Val Leu  
1570 1575 1580

Cys Asp Arg Cys Thr Pro Ile Pro Gly Gly Pro Thr Ile Ser Tyr Thr  
585 1590 1595 1600

Phe Arg Ser Val Gly Thr Phe Asn Ile Ile Val Thr Ala Glu Asn Glu  
1605 1610 1615

Val Gly Ser Ala Gln Asp Ser Ile Phe Val Tyr Val Leu Gln Leu Ile  
1620 1625 1630

Glu Gly Leu Gln Val Val Gly Gly Gly Arg Tyr Phe Pro Thr Asn His  
1635 1640 1645

Thr Val Gln Leu Gln Ala Val Val Arg Asp Gly Thr Asn Val Ser Tyr  
1650 1655 1660

Ser Trp Thr Ala Trp Arg Asp Arg Gly Pro Ala Leu Ala Gly Ser Gly  
665 1670 1675 1680

Lys Gly Phe Ser Leu Thr Val Leu Glu Ala Gly Thr Tyr His Val Gln  
1685 1690 1695

Leu Arg Ala Thr Asn Met Leu Gly Ser Ala Trp Ala Asp Cys Thr Met  
1700 1705 1710

Asp Phe Val Glu Pro Val Gly Trp Leu Met Val Ala Ala Ser Pro Asn  
1715 1720 1725

Pro Ala Ala Val Asn Thr Ser Val Thr Leu Ser Ala Glu Leu Ala Gly  
1730 1735 1740

Gly Ser Gly Val Val Tyr Thr Trp Ser Leu Glu Glu Gly Leu Ser Trp  
745 1750 1755 1760

Glu Thr Ser Glu Pro Phe Thr Thr His Ser Phe Pro Thr Pro Gly Leu  
1765 1770 1775

His Leu Val Thr Met Thr Ala Gly Asn Pro Leu Gly Ser Ala Asn Ala  
1780 1785 1790

Thr Val Glu Val Asp Val Gln Val Pro Val Ser Gly Leu Ser Ile Arg  
1795 1800 1805

Ala Ser Glu Pro Gly Gly Ser Phe Val Ala Ala Gly Ser Ser Val Pro  
1810 1815 1820

Phe Trp Gly Gln Leu Ala Thr Gly Thr Asn Val Ser Trp Cys Trp Ala  
825 1830 1835 1840

Val Pro Gly Gly Ser Ser Lys Arg Gly Pro His Val Thr Met Val Phe  
1845 1850 1855

Pro Asp Ala Gly Thr Phe Ser Ile Arg Leu Asn Ala Ser Asn Ala Val  
1860 1865 1870

Ser Trp Val Ser Ala Thr Tyr Asn Leu Thr Ala Glu Glu Pro Ile Val  
1875 1880 1885

Gly Leu Val Leu Trp Ala Ser Ser Lys Val Val Ala Pro Gly Gln Leu  
1890 1895 1900

Val His Phe Gln Ile Leu Leu Ala Ala Gly Ser Ala Val Thr Phe Arg  
1905 1910 1915 1920

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Leu Gln Val Gly Gly Ala Asn Pro Glu Val Leu Pro Gly Pro Arg Phe  
1925 1930 1935

Ser His Ser Phe Pro Arg Val Gly Asp His Val Val Ser Val Arg Gly  
1940 1945 1950

Lys Asn His Val Ser Trp Ala Gln Ala Gln Val Arg Ile Val Val Leu  
1955 1960 1965

Glu Ala Val Ser Gly Leu Gln Val Pro Asn Cys Cys Glu Pro Gly Ile  
1970 1975 1980

Ala Thr Gly Thr Glu Arg Asn Phe Thr Ala Arg Val Gln Arg Gly Ser  
985 1990 1995 2000

Arg Val Ala Tyr Ala Trp Tyr Phe Ser Leu Gln Lys Val Gln Gly Asp  
2005 2010 2015

Ser Leu Val Ile Leu Ser Gly Arg Asp Val Thr Tyr Thr Pro Val Ala  
2020 2025 2030

Ala Gly Leu Leu Glu Ile Gln Val Arg Ala Phe Asn Ala Leu Gly Ser  
2035 2040 2045

Glu Asn Arg Thr Leu Val Leu Glu Val Gln Asp Ala Val Gln Tyr Val  
2050 2055 2060

Ala Leu Gln Ser Gly Pro Cys Phe Thr Asn Arg Ser Ala Gln Phe Glu  
065 2070 2075 2080

Ala Ala Thr Ser Pro Ser Pro Arg Arg Val Ala Tyr His Trp Asp Phe  
2085 2090 2095

Gly Asp Gly Ser Pro Gly Gln Asp Thr Asp Glu Pro Arg Ala Glu His  
2100 2105 2110

Ser Tyr Leu Arg Pro Gly Asp Tyr Arg Val Gln Val Asn Ala Ser Asn  
2115 2120 2125

Leu Val Ser Phe Phe Val Ala Gln Ala Thr Val Thr Val Gln Val Leu  
2130 2135 2140

Ala Cys Arg Glu Pro Glu Val Asp Val Val Leu Pro Leu Gln Val Leu  
145 2150 2155 2160

Met Arg Arg Ser Gln Arg Asn Tyr Leu Glu Ala His Val Asp Leu Arg  
2165 2170 2175

Asp Cys Val Thr Tyr Gln Thr Glu Tyr Arg Trp Glu Val Tyr Arg Thr  
2180 2185 2190

Ala Ser Cys Gln Arg Pro Gly Arg Pro Ala Arg Val Ala Leu Pro Gly  
2195 2200 2205

Val Asp Val Ser Arg Pro Arg Leu Val Leu Pro Arg Leu Ala Leu Pro  
2210 2215 2220

Val Gly His Tyr Cys Phe Val Phe Val Val Ser Phe Gly Asp Thr Pro  
225 2230 2235 2240

Leu Thr Gln Ser Ile Gln Ala Asn Val Thr Val Ala Pro Glu Arg Leu  
2245 2250 2255

Val Pro Ile Ile Glu Gly Gly Ser Tyr Arg Val Trp Ser Asp Thr Arg  
2260 2265 2270

Asp Leu Val Leu Asp Gly Ser Glu Ser Tyr Asp Pro Asn Leu Glu Asp

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2275	2280	2285
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Gln Arg Glu Ala Gly Gly Cys Ala Leu Asn Phe Gly Pro Arg Gly Ser		
305	2310	2315 2320
Ser Thr Val Thr Ile Pro Arg Glu Arg Leu Ala Ala Gly Val Glu Tyr		
	2325	2330 2335
Thr Phe Ser Leu Thr Val Trp Lys Ala Gly Arg Lys Glu Glu Ala Thr		
	2340	2345 2350
Asn Gln Thr Val Leu Ile Arg Ser Gly Arg Val Pro Ile Val Ser Leu		
	2355	2360 2365
Glu Cys Val Ser Cys Lys Ala Gln Ala Val Tyr Glu Val Ser Arg Ser		
	2370	2375 2380
Ser Tyr Val Tyr Leu Glu Gly Arg Cys Leu Asn Cys Ser Ser Gly Ser		
385	2390	2395 2400
Lys Arg Gly Arg Trp Ala Ala Arg Thr Phe Ser Asn Lys Thr Leu Val		
	2405	2410 2415
Leu Asp Glu Thr Thr Thr Ser Thr Gly Ser Ala Gly Met Arg Leu Val		
	2420	2425 2430
Leu Arg Arg Gly Val Leu Arg Asp Gly Glu Gly Tyr Thr Phe Thr Leu		
	2435	2440 2445
Thr Val Leu Gly Arg Ser Gly Glu Glu Glu Gly Cys Ala Ser Ile Arg		
	2450	2455 2460
Leu Ser Pro Asn Arg Pro Pro Leu Gly Gly Ser Cys Arg Leu Phe Pro		
465	2470	2475 2480
Leu Gly Ala Val His Ala Leu Thr Thr Lys Val His Phe Glu Cys Thr		
	2485	2490 2495
Gly Trp His Asp Ala Glu Asp Ala Gly Ala Pro Leu Val Tyr Ala Leu		
	2500	2505 2510
Leu Leu Arg Arg Cys Arg Gln Gly His Cys Glu Glu Phe Cys Val Tyr		
	2515	2520 2525
Lys Gly Ser Leu Ser Ser Tyr Gly Ala Val Leu Pro Pro Gly Phe Arg		
	2530	2535 2540
Pro His Phe Glu Val Gly Leu Ala Val Val Val Gln Asp Gln Leu Gly		
545	2550	2555 2560
Ala Ala Val Val Ala Leu Asn Arg Ser Leu Ala Ile Thr Leu Pro Glu		
	2565	2570 2575
Pro Asn Gly Ser Ala Thr Gly Leu Thr Val Trp Leu His Gly Leu Thr		
	2580	2585 2590
Ala Ser Val Leu Pro Gly Leu Leu Arg Gln Ala Asp Pro Gln His Val		
	2595	2600 2605
Ile Glu Tyr Ser Leu Ala Leu Val Thr Val Leu Asn Glu Tyr Glu Arg		
	2610	2615 2620
Ala Leu Asp Val Ala Ala Glu Pro Lys His Glu Arg Gln His Arg Ala		
625	2630	2635 2640



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Gln Ile Arg Lys Asn Ile Thr Glu Thr Leu Val Ser Leu Arg Val His  
2645 2650 2655

Thr Val Asp Asp Ile Gln Gln Ile Ala Ala Ala Leu Ala Gln Cys Met  
2660 2665 2670

Gly Pro Ser Arg Glu Leu Val Cys Arg Ser Cys Leu Lys Gln Thr Leu  
2675 2680 2685

His Lys Leu Glu Ala Met Met Leu Ile Leu Gln Ala Glu Thr Thr Ala  
2690 2695 2700

Gly Thr Val Thr Pro Thr Ala Ile Gly Asp Ser Ile Leu Asn Ile Thr  
705 2710 2715 2720

Gly Asp Leu Ile His Leu Ala Ser Ser Asp Val Arg Ala Pro Gln Pro  
2725 2730 2735

Ser Glu Leu Gly Ala Glu Ser Pro Ser Arg Met Val Ala Ser Gln Ala  
2740 2745 2750

Tyr Asn Leu Thr Ser Ala Leu Met Arg Ile Leu Met Arg Ser Arg Val  
2755 2760 2765

Leu Asn Glu Glu Pro Leu Thr Leu Ala Gly Glu Glu Ile Val Ala Gln  
2770 2775 2780

Gly Lys Arg Ser Asp Pro Arg Ser Leu Leu Cys Tyr Gly Gly Ala Pro  
785 2790 2795 2800

Gly Pro Gly Cys His Phe Ser Ile Pro Glu Ala Phe Ser Gly Ala Leu  
2805 2810 2815

Ala Asn Leu Ser Asp Val Val Gln Leu Ile Phe Leu Val Asp Ser Asn  
2820 2825 2830

Pro Phe Pro Phe Gly Tyr Ile Ser Asn Tyr Thr Val Ser Thr Lys Val  
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 35 40 45  
 Lys Ser Asn Phe Phe Val Leu Leu Leu Leu Ala Ile Ser Ala Ile Gln  
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 Ile Asp Gly Leu His Tyr Gln Leu Leu Asp Gly Ile Ala Thr Phe Arg  
 65 70 75 80  
 Leu Asp Asn Asp Asp Thr Thr Ile Gly Gly Val Pro Arg Asn Ser Gln  
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 Gly Val Val Lys Ile Lys Leu Ser Cys Gly Leu Asn Arg Leu Ser Val  
 100 105 110  
 Glu Asn Lys Val Thr Glu Val Ser Ser Leu Glu Leu Ile His Asn Cys  
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 Glu Ala Lys Tyr Glu Val Cys Tyr Asp Asp Gly Ile Asp Arg Cys Asp  
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 Gly Tyr Arg Glu Lys Cys Glu Ser Gly Glu Ile Asn Glu Glu Tyr Ala  
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1665 1670 1675 1680

Thr Val Ser Ile Ser Thr Leu Ser Pro Thr Ala Ser Tyr Thr Lys Asp  
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Asp Leu Gln Ser Leu Ile Lys Glu Gln Thr Leu Val Thr Val Ser Gly  
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1730 1735 1740

Leu Lys Tyr Ala Thr Asp Asn Tyr Asp Ser Leu Tyr Asn Val Leu Pro  
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Ser Val Asp Gly Thr Gly Met Val Ile Val Ile Asp Asp Ala Ser Asn  
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Ser Pro Ala Ser Thr Leu Asn Thr Ala Glu Ile Thr Asp Lys Thr Leu  
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Ile Gln Val Gly Leu Val Cys Tyr Ala Thr Asn Pro Arg Thr Tyr Val  
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Lys Asp Glu Asn Gln Ile Ile Ile Pro Ile Thr Gly Thr Thr Ala Pro  
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Arg Thr Lys Lys Ser Ala Glu Cys Thr Met Phe Lys Gln Phe Gln Gly  
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3095

3100

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<213> C. Elegans *pkd-2* gene

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 Cys Val Leu Asp Arg Cys Asp Asn His Tyr Thr Thr Lys Pro Arg His  
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195 200 205

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Thr Ser Met Asp Asn Ile Trp Asp Trp Leu Ser Gln Val Leu Ile Pro  
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Gly Ile Tyr Trp Thr Glu Thr Ser Asn Ser Thr Asp Asn Glu Asn Met  
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Ile Tyr Tyr Glu Asn Arg Leu Leu Gly Glu Pro Arg Ile Arg Met Leu  
260 265 270

Lys Val Thr Asn Asp Ser Cys Thr Val Met Lys Ser Phe Gln Arg Glu  
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Met Val Gly Asp Gly Ser Val Asp Ala Phe Ile Tyr Ala Thr Ala Lys  
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Gly Gly Phe Val Gln Arg Leu Pro Val Ala Gly Ser Thr Glu Ala Gln  
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Phe Cys Val Val Lys Leu Leu Phe Glu Leu Pro Ala Ser Gly Gly Val  
385 390 395 400

Ile Thr Thr Pro Lys Leu Met Thr Tyr Asp Leu Leu Thr Tyr Gln Thr  
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Asp Phe Asn Phe Ser Ala Leu Glu Ser Cys Asn Arg Phe Phe Gly Pro  
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Ala Phe Phe Ile Ala Tyr Val Phe Phe Val Ser Phe Ile Leu Leu Asn  
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Lys Val Arg Gly Leu Thr Lys Arg Gly Lys Arg Pro Asp Ala Pro Gly  
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22

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pkd-2 genomic (sy606) deletion

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Ile Phe Thr Lys Leu Leu Gln Asp Asn Leu Pro Ala His Trp Met Lys  
35 40 45  
Lys Ser Asn Phe Phe Val Leu Leu Leu Leu Ala Ile Ser Ala Ile Gln  
50 55 60  
Ile Asp Gly Leu His Tyr Gln Leu Leu Asp Gly Ile Ala Thr Phe Arg  
65 70 75 80  
Leu Asp Asn Asp Asp Thr Thr Ile Gly Gly Val Pro Arg Asn Ser Gln  
85 90 95  
Gly Val Val Lys Ile Lys Leu Ser Cys Gly Leu Asn Arg Leu Ser Val  
100 105 110  
Glu Asn Lys Val Thr Glu Val Ser Ser Leu Glu Leu Ile His Asn Cys  
115 120 125  
Ile Gln Thr Glu Thr Arg Leu Val Gly Leu Phe Leu Asn Ser Thr Trp  
130 135 140  
Ile Thr Leu Asn Glu Val Asn Asp Asp Asp Glu Ile Ser Ile Ala Val  
145 150 155 160  
Glu Ala Lys Tyr Glu Val Cys Tyr Asp Asp Gly Ile Asp Arg Cys Asp  
165 170 175  
Gly Ser Leu Trp Trp Leu Gln Val Gly Gly Asn Glu Met Ala Leu Leu  
180 185 190  
Gly Tyr Arg Glu Lys Cys Glu Ser Gly Glu Ile Asn Glu Glu Tyr Ala

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195	200	205
Arg Arg Met Cys Lys Arg	Pro Tyr Arg Ser Glu Lys Ser Thr Ala Ile	
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Ser Asp Ser Gln Gly Val Tyr Tyr Asp Gly Gln Val Leu Lys Gly Val		
225	230	235 240
Arg Ala Lys Gln Phe Ser Met Arg Thr Ser Gly Ser Pro Thr Leu Arg		
	245	250 255
Arg Met Lys Arg Asp Ala Gly Asp Asn Thr Cys Asp Tyr Thr Ile Glu		
	260	265 270
Ser Thr Ser Thr Ser Thr Thr Thr Pro Thr Thr Thr Thr Val Thr Ser		
	275	280 285
Thr Val Thr Ser Thr Thr Thr Val Pro Thr Ser Thr Ser Thr Val Thr		
	290	295 300
Thr Ala Met Ser Thr Ser Thr Ser Thr Pro Ser Thr Ser Thr Thr Ile		
305	310	315 320
Glu Ser Thr Ser Thr Thr Phe Thr Ser Thr Ala Ser Thr Ser Thr Ser		
	325	330 335
Ser Thr Ser Thr Thr Gln Gln Ser Ser Ser Thr Ile Thr Ser Ser Pro		
	340	345 350
Ser Ser Thr Thr Leu Ser Thr Ser Ile Pro Thr Thr Thr Thr Pro Glu		
	355	360 365
Ile Thr Ser Thr Leu Ser Ser Leu Pro Asp Asn Ala Ile Cys Ser Tyr		
	370	375 380
Leu Asp Glu Thr Thr Thr Ser Thr Thr Phe Thr Thr Thr Met Leu Thr		
385	390	395 400
Ser Thr Thr Thr Glu Glu Pro Ser Thr Ser Thr Thr Thr Thr Glu Val		
	405	410 415
Thr Ser Thr Ser Thr Val Thr Thr Thr Glu Pro Thr Thr Thr Leu		
	420	425 430
Thr Thr Ser Thr Ala Ser Thr Ser Thr Thr Glu Pro Ser Thr Ser Thr		
	435	440 445
Val Thr Thr Ser Pro Ser Thr Ser Pro Val Thr Ser Thr Val Thr Ser		
	450	455 460
Ser Ser Ser Ser Ser Thr Thr Val Thr Thr Pro Thr Ser Thr Glu Ser		
465	470	475 480
Thr Ser Thr Ser Pro Ser Ser Thr Val Thr Thr Ser Thr Thr Ala Pro		
	485	490 495
Ser Thr Ser Thr Thr Gly Pro Ser Ser Ser Ser Ser Thr Pro Ser Ser		
	500	505 510
Thr Ala Ser Ser Ser Val Ser Ser Thr Ala Ser Ser Thr Gln Ser Ser		
	515	520 525
Thr Ser Thr Gln Gln Ser Ser Thr Thr Thr Lys Ser Glu Thr Thr Thr		
	530	535 540
Ser Ser Asp Gly Thr Asn Pro Asp Phe Tyr Phe Val Glu Lys Ala Thr		

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				565					570				575	Gly
Leu	Gly	Ile	Ile	Gly	Tyr	Gln	Thr	Ser	Ile	Glu	Cys	Thr	Ser	Pro
			580					585					590	Thr
Ser	Ser	Asn	Tyr	Val	Ser	Thr	Thr	Lys	Asp	Gly	Ala	Cys	Phe	Thr
		595					600					605		Lys
Ser	Val	Ser	Met	Pro	Arg	Leu	Gly	Gly	Thr	Tyr	Pro	Ala	Ser	Thr
	610					615					620			Phe
Val	Gly	Pro	Gly	Asn	Tyr	Thr	Phe	Arg	Ala	Thr	Met	Thr	Thr	Asp
625					630					635				Asp
Lys	Lys	Val	Tyr	Tyr	Thr	Tyr	Ala	Asn	Val	Tyr	Ile	Gln	Glu	Tyr
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Ser	Thr	Thr	Ile	Glu	Ser	Glu	Ser	Ser	Thr	Ser	Ala	Val	Ala	Ser
			660					665					670	Ser
Thr	Ser	Ser	Thr	Pro	Ser	Thr	Pro	Ser	Ser	Thr	Leu	Ser	Thr	Ser
		675					680					685		Thr
Val	Thr	Glu	Pro	Ser	Ser	Thr	Arg	Ser	Ser	Asp	Ser	Thr	Thr	Ser
	690					695					700			
Ala	Gly	Ser	Thr	Thr	Thr	Leu	Gln	Glu	Ser	Thr	Thr	Thr	Ser	Glu
705					710					715				720
Ser	Thr	Thr	Asp	Ser	Ser	Thr	Thr	Thr	Ile	Ser	Asp	Thr	Ser	Thr
				725					730					735
Thr	Ser	Ser	Pro	Ser	Ser	Thr	Thr	Ala	Asp	Ser	Thr	Ser	Thr	Leu
			740					745					750	Ser
Val	Asp	Gln	Phe	Asp	Phe	Ile	Leu	Asp	Ser	Gly	Leu	Ser	Trp	Asn
		755					760					765		Glu
Thr	Arg	His	Asn	Glu	Asp	Ser	Ile	Asn	Ile	Val	Pro	Leu	Pro	Thr
	770					775					780			Asn
Ala	Ile	Thr	Pro	Thr	Glu	Arg	Ser	Gln	Thr	Phe	Glu	Cys	Arg	Asn
785					790					795				800
Ser	Thr	Glu	Pro	Phe	Leu	Ile	Ile	Lys	Glu	Ser	Thr	Cys	Leu	Asn
				805					810					815
Ser	Asn	Thr	Val	Leu	Asn	Ala	Thr	Tyr	Ser	Ser	Asn	Ile	Pro	Ile
			820					825					830	Gln
Pro	Ile	Glu	Thr	Phe	Leu	Val	Gly	Ile	Gly	Thr	Tyr	Glu	Phe	Arg
		835					840					845		Ile
Asn	Met	Thr	Asp	Leu	Thr	Thr	Met	Gln	Val	Val	Ser	His	Ile	Phe
	850					855					860			Thr
Leu	Asn	Val	Val	Ala	Asp	Ser	Thr	Ser	Thr	Ser	Glu	Val	Thr	Ser
865					870					875				880
Thr	Ser	Thr	Gly	Ser	Ser	Ser	Glu	Ser	Ser	Ala	Ile	Ser	Thr	Thr
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Gly	Ile	Glu	Ser	Thr	Ser	Thr	Leu	Glu	Ala	Ser	Thr	Thr	Asp	Ala
														Ser

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900										905										910																																		
Gln	Asp	Ser	Ser	Thr	Ser	Thr	Ser	Asp	Ser	Gly	Thr	Thr	Ser	Asp	Ser																																							
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Thr	Thr	Ile	Asp	Ser	Ser	Asn	Ser	Thr	Pro	Ser	Thr	Ser	Asp	Ser	Ser																																							
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Gly	Leu	Ser	Gln	Thr	Pro	Ser	Asp	Ser	Ser	Ser	Ala	Ser	Asp	Ser	Met																																							
		945																																																				
Arg	Thr	Thr	Thr	Val	Asp	Pro	Asp	Ala	Ser	Thr	Glu	Thr	Pro	Tyr	Asp																																							
				965																																																		
Phe	Val	Leu	Glu	Asn	Leu	Thr	Trp	Asn	Glu	Thr	Val	Tyr	Tyr	Ser	Glu																																							
				980																																																		
Asn	Pro	Phe	Tyr	Ile	Thr	Pro	Ile	Pro	Asn	Lys	Glu	Pro	Gly	Ala	Leu																																							
				995																																																		
Thr	Thr	Ala	Met	Thr	Cys	Gln	Cys	Arg	Asn	Asp	Ser	Ser	Gln	Pro	Phe																																							
Val	Leu	Leu	Lys	Glu	Ser	Asn	Cys	Leu	Thr	Glu	Phe	Gly	Lys	Asn	Gly																																							
Ala	Tyr	Ser	Ala	Ser	Val	Ser	Phe	Asn	Pro	Met	Thr	Ser	Phe	Val	Pro																																							
Ala	Thr	Gly	Thr	Tyr	Glu	Phe	Leu	Ile	Asn	Val	Thr	Asn	Arg	Ala	Ser																																							
Gly	Glu	Ser	Ala	Ser	His	Ile	Phe	Thr	Met	Asn	Val	Val	Leu	Pro	Thr																																							
Thr	Thr	Thr	Glu	Thr	Pro	Pro	Thr	Thr	Val	Ser	Ser	Ser	Asp	Asp	Ala																																							
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Ser	Thr	Thr	Ser	Gly	Ser	Gly	Ser	Gly	Gln	Ser	Ser	Thr	Gly	Ser	Gly																																							
Ala	Gly	Gly	Ser	Gly	Thr	Thr	Ala	Ser	Gly	Ser	Gly	Ser	Gly	Gly	Ser																																							
Ser	Gly	Thr	Gly	Ser	Asp	Gly	Val	Asn	Ser	Gly	Lys	Thr	Thr	Ala	Leu																																							
Asn	Gly	Asp	Gly	Thr	Gly	Ser	Gly	Thr	Ala	Thr	Thr	Pro	Gly	Ser	His																																							
Leu	Gly	Asp	Gly	Gly	Ser	Thr	Ser	Gly	Ser	Gly	Ser	Asp	Ser	Asn	Gly																																							
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Ser	Ser	Asp	Ser	Ser	Gly	Ala	Asn	Gly	Ala	Phe	Ser	Ala	Thr	Ala	Gln																																							
Pro	Ser	Thr	Arg	Thr	Thr	Lys	Thr	Arg	Ser	Ser	Leu	Ala	Thr	Val	Ser																																							



Pro Ile Ser Ala Ala Glu Gln Ala Ile Ile Asp Ala Gln Lys Ala Asp  
 1265 1270 1275 1280  
 Val Met Asn Gln Leu Ala Gly Ile Met Asp Gly Ser Ala Ser Asn Asn  
 1285 1290 1295  
 Ser Leu Asn Thr Ser Ser Ser Leu Leu Asn Gln Ile Ser Ser Leu Pro  
 1300 1305 1310  
 Ala Ala Asp Leu Val Glu Val Ala Gln Ser Leu Leu Ser Asn Thr Leu  
 1315 1320 1325  
 Lys Ile Pro Gly Val Gly Asn Met Ser Ser Val Asp Val Leu Lys Thr  
 1330 1335 1340  
 Leu Gln Asp Asn Ile Ala Thr Thr Asn Ser Glu Leu Ala Asp Glu Met  
 1345 1350 1355 1360  
 Ala Lys Val Ile Thr Lys Leu Ala Asn Val Asn Met Thr Ser Ala Gln  
 1365 1370 1375  
 Ser Leu Asn Ser Val Leu Ser Ser Leu Asp Leu Ala Leu Lys Gly Ser  
 1380 1385 1390  
 Thr Val Tyr Thr Leu Gly Val Ser Ser Thr Lys Ser Lys Asp Gly Thr  
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 Tyr Ala Val Ile Phe Gly Tyr Val Ile Ala Ser Gly Tyr Thr Leu Val  
 1410 1415 1420  
 Ser Pro Arg Cys Thr Leu Ser Ile Tyr Gly Ser Thr Ile Tyr Leu Thr  
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 Gly Asp Thr Arg Ala Ser Tyr Lys Gln Leu Asp Gly Asp Thr Val Thr  
 1445 1450 1455  
 Ala Asp Thr Met Leu Ala Ala Ala Ile Gly Ile Gln Gly Met Phe Ala  
 1460 1465 1470  
 Thr Asn Gly Arg Thr Val Gln Val Glu Gln Asp Lys Ile Asp Asp Lys  
 1475 1480 1485  
 Arg Ser Leu Val Ser Gly Asn Ile Met Ala Thr Met Ser Gly Val Gly  
 1490 1495 1500  
 Asp Val Gln Ser Gly Glu Tyr Ser Tyr Asn Asp Met Tyr Val Thr Ala  
 1505 1510 1515 1520  
 Trp Asn Val Thr Tyr Asp Asn Ser Thr Val Gly Ser Thr Ser Gln Lys  
 1525 1530 1535  
 Asn Thr Ser Phe Ser Phe Asn Ile Pro Val Ser Glu Val Gln Tyr Ile  
 1540 1545 1550  
 Leu Leu Ile Glu Ser Gly Thr Met Ile Lys Leu His Ser Thr Gln Asn  
 1555 1560 1565  
 Ile Val Ser Arg Gly Leu Val Val Thr Ala Ser Tyr Gly Gly Val Thr  
 1570 1575 1580  
 Tyr Thr Ile Thr Cys Thr Asn Gly Thr Gly Lys Phe Val Glu Val Asp  
 1585 1590 1595 1600  
 Thr Asp Asn Ala Ile Phe Ser Tyr Asn Ala Asp Ser Phe Thr Val Val  
 1605 1610 1615

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Ala Ser Asp Gly Ser Ser Ala Ser Thr Val Lys Lys Leu Ile Gln Met  
1620 1625 1630

Pro Ile Val Ile Glu Asn Val Asn Leu Ala Leu Phe Asn Gln Thr Thr  
1635 1640 1645

Ser Pro Leu Val Phe Ser Asn Ala Gly Ser Tyr Ser Met Arg Met Val  
1650 1655 1660

Leu Ser Pro Gln Asp Ile Gly Ile Pro Ala Val Ser Ala Leu Ser Gln  
1665 1670 1675 1680

Thr Val Ser Ile Ser Thr Leu Ser Pro Thr Ala Ser Tyr Thr Lys Asp  
1685 1690 1695

Asp Leu Gln Ser Leu Ile Lys Glu Gln Thr Leu Val Thr Val Ser Gly  
1700 1705 1710

Thr Thr Ser Asn Ser Leu Leu Ser Ile Ala Gly Ser Leu Thr Ser Ala  
1715 1720 1725

Leu Lys Ile Ala Leu Asp Asn Pro Leu Ser Ser Asp Leu Ala Ala Asn  
1730 1735 1740

Leu Lys Tyr Ala Thr Asp Asn Tyr Asp Ser Leu Tyr Asn Val Leu Pro  
1745 1750 1755 1760

Ser Asp Pro Asp Asn Ile Val Tyr Val Glu Glu Met Thr Ser Glu Glu  
1765 1770 1775

Trp Ala Ala Tyr Val Thr Lys Met Phe Gln Lys Asn Ile Ala Lys Asn  
1780 1785 1790

Leu Ala Asn Gln Leu Ala Ser Thr Leu Asp Thr Leu Glu Asn Thr Leu  
1795 1800 1805

Ala Ala Arg Ala Ile Ala Thr Gly Asn Leu Pro Tyr Asp Tyr Ser Asn  
1810 1815 1820

Ser Val Asp Gly Thr Gly Met Val Ile Val Ile Asp Asp Ala Ser Asn  
1825 1830 1835 1840

Ile Val Gly Lys Thr Gln Asn Cys Glu Glu Trp Ala Phe Lys Leu Pro  
1845 1850 1855

Ser Pro Ala Ser Thr Leu Asn Thr Ala Glu Ile Thr Asp Lys Thr Leu  
1860 1865 1870

Ile Gln Val Gly Leu Val Cys Tyr Ala Thr Asn Pro Arg Thr Tyr Val  
1875 1880 1885

Asp Asn Phe Asp Met Leu Ile Thr Ser Gly Ala Leu Glu Ala His Ile  
1890 1895 1900

Lys Asp Glu Asn Gln Ile Ile Ile Pro Ile Thr Gly Thr Thr Ala Pro  
1905 1910 1915 1920

Ile Tyr Val Asn Gly Arg Gly Ser Glu Asp Asp Ala Val Leu Thr Leu  
1925 1930 1935

Met Gln Gln Gly Asp Phe Ala Ser Tyr Gln Ile Leu Asp Leu His Ala  
1940 1945 1950

Phe Arg Thr Thr Asn Trp Asn Asn Ser Leu Gln Val Glu Ile Ile Ala  
1955 1960 1965

Ser Gln Asp Tyr Glu Ile Pro Asn Asn Asp Asp Thr Tyr Met Phe Ser

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1970 1975 1980

Ser Phe Gln Ser Leu Pro Gly Pro Leu Glu Ser Asn His Glu Trp Ile  
1985 1990 1995 2000

Phe Asp Leu Asn Thr Leu Asn Lys Thr Ser Asn Tyr Phe Val Thr Ala  
2005 2010 2015

Gly Asn Leu Ile Asn Asn Thr Gly Leu Phe Phe Ile Gly Ile Gly Lys  
2020 2025 2030

Arg Asn Ser Ser Thr Asn Thr Gly Asn Ser Ser Asp Ile Val Asn Tyr  
2035 2040 2045

Gly Gln Tyr Asp Ser Met Gln Trp Ser Phe Ala Arg Ser Val Pro Met  
2050 2055 2060

Asp Tyr Gln Val Ala Ala Val Ser Lys Gly Cys Tyr Phe Tyr Gln Lys  
2065 2070 2075 2080

Thr Ser Asp Val Phe Asn Ser Glu Gly Met Tyr Pro Ser Asp Gly Gln  
2085 2090 2095

Gly Met Gln Phe Val Asn Cys Ser Thr Asp His Leu Thr Met Phe Ser  
2100 2105 2110

Val Gly Ala Phe Asn Pro Thr Ile Asp Ala Asp Phe Ser Tyr Asn Tyr  
2115 2120 2125

Asn Val Asn Glu Ile Glu Lys Asn Val Lys Val Met Ile Ala Ala Val  
2130 2135 2140

Phe Met Leu Val Val Tyr Gly Cys Leu Thr Ile Asn Ala Ile Ile Cys  
2145 2150 2155 2160

Gln Arg Lys Asp Ala Ser Arg Gly Arg Leu Arg Phe Leu Lys Asp Asn  
2165 2170 2175

Glu Pro His Asp Gly Tyr Met Tyr Val Ile Ala Val Glu Thr Gly Tyr  
2180 2185 2190

Arg Met Phe Ala Thr Thr Asp Ser Thr Ile Cys Phe Asn Leu Ser Gly  
2195 2200 2205

Asn Glu Gly Asp Gln Ile Phe Arg Ser Phe Arg Ser Glu Glu Asp Gly  
2210 2215 2220

Asn Trp Glu Phe Pro Phe Ser Trp Gly Thr Thr Asp Arg Phe Val Met  
2225 2230 2235 2240

Thr Thr Ala Phe Pro Leu Gly Glu Leu Glu Tyr Met Arg Leu Trp Leu  
2245 2250 2255

Asp Asp Ala Gly Leu Asp His Arg Glu Ser Trp Tyr Cys Asn Arg Ile  
2260 2265 2270

Ile Val Lys Asp Leu Gln Thr Gln Asp Ile Tyr Tyr Phe Pro Phe Asn  
2275 2280 2285

Asn Trp Leu Gly Thr Lys Asn Gly Asp Gly Glu Thr Glu Arg Leu Ala  
2290 2295 2300

Arg Val Glu Tyr Lys Arg Arg Phe Leu Asp Glu Ser Met Ser Met His  
2305 2310 2315 2320

Met Leu Ala Gln Thr Ile Ser Trp Phe Ala Met Phe Thr Gly Gly Gly

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Asn Arg Leu Arg Asp Arg Val Ser Arg Gln Asp Tyr Ser Val Ser Ile		
2340	2345	2350
Ile Phe Ser Leu Val Val Val Ser Met Ile Ser Ile Thr Ile Leu Lys		
2355	2360	2365
Ser Asp Asn Ser Ser Ile Ile Ser Asp Ser Lys Ser Val Ser Glu Phe Thr		
2370	2375	2380
Phe Thr Ile Lys Asp Ile Ala Phe Gly Val Gly Phe Gly Val Leu Ile		
2385	2390	2400
Thr Phe Leu Asn Ser Leu His Ile Leu Leu Cys Thr Lys Cys Arg Ser		
2405	2410	2415
His Ser Glu His Tyr Tyr Tyr Lys Lys Arg Lys Arg Glu Asp Pro Glu		
2420	2425	2430
Phe Lys Asp Asn Ser Gly Ser Trp Pro Met Phe Met Ala Gly Met Ala		
2435	2440	2445
Arg Thr Ile Ile Val Phe Pro Val Leu Met Gly Leu Ile Tyr Ile Ser		
2450	2455	2460
Gly Ala Gly Met Ser Leu Met Asp Asp Leu Ala Asn Ser Phe Tyr Ile		
2465	2470	2475
Arg Phe Leu Ile Ser Leu Ile Leu Trp Ala Val Val Phe Glu Pro Ile		
2485	2490	2495
Lys Gly Leu Ile Trp Ala Phe Leu Ile Leu Lys Thr Arg Lys Ser His		
2500	2505	2510
Lys Ile Ile Asn Lys Leu Glu Gly Ser Asp Gly Thr Val Val Lys Tyr		
2515	2520	2525
Tyr Glu Met Leu Tyr Ile Phe Phe Ser Val Leu Ile Phe Val Lys Glu		
2530	2535	2540
Ile Val Phe Tyr Leu Tyr Gly Arg Tyr Lys Val Ile Thr Thr Met Lys		
2545	2550	2555
Pro Thr Arg Asn Pro Phe Lys Ile Val Tyr Gln Leu Ala Leu Gly Asn		
2565	2570	2575
Phe Ser Pro Trp Asn Phe Met Asp Leu Ile Val Gly Ala Leu Ala Val		
2580	2585	2590
Ala Ser Val Leu Ala Tyr Thr Ile Arg Gln Arg Thr Thr Asn Arg Ala		
2595	2600	2605
Met Glu Asp Phe Asn Ala Asn Asn Gly Asn Ser Tyr Ile Asn Leu Thr		
2610	2615	2620
Glu Gln Arg Asn Trp Glu Ile Val Phe Ser Tyr Cys Leu Ala Gly Ala		
2625	2630	2635
Val Phe Phe Thr Ser Cys Lys Met Ile Arg Ile Leu Arg Phe Asn Arg		
2645	2650	2655
Arg Ile Gly Val Leu Ala Ala Thr Leu Asp Asn Ala Leu Gly Ala Ile		
2660	2665	2670
Val Ser Phe Gly Ile Ala Phe Leu Phe Phe Ser Met Thr Phe Asn Ser		

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2675                      2680                      2685

Val Leu Tyr Ala Val Leu Gly Asn Lys Met Gly Gly Tyr Arg Ser Leu  
2690                      2695                      2700

Met Ala Thr Phe Gln Thr Ala Leu Ala Gly Met Leu Gly Lys Leu Asp  
2705                      2710                      2715                      2720

Val Thr Ser Ile Gln Pro Ile Ser Gln Phe Ala Phe Val Val Ile Met  
2725                      2730                      2735

Leu Tyr Met Ile Ala Gly Ser Lys Leu Val Leu Gln Leu Tyr Val Thr  
2740                      2745                      2750

Ile Ile Met Phe Glu Phe Glu Glu Ile Arg Asn Asp Ser Glu Lys Gln  
2755                      2760                      2765

Thr Asn Asp Tyr Glu Ile Ile Asp His Ile Lys Tyr Lys Thr Lys Arg  
2770                      2775                      2780

Arg Leu Gly Leu Leu Glu Pro Lys Asp Phe Ala Pro Val Ser Ile Ala  
2785                      2790                      2795                      2800

Asp Thr Gln Lys Asp Phe Arg Leu Phe His Ser Ala Val Ala Lys Val  
2805                      2810                      2815

Asn Leu Leu His His Arg Ala Thr Arg Met Leu Gln Thr Gln Gly Gln  
2820                      2825                      2830

Tyr Gln Asn Gln Thr Val Ile Asn Tyr Thr Leu Ser Tyr Asp Pro Val  
2835                      2840                      2845

Ser Ala Ile His Glu Thr Gly Pro Lys Arg Phe Gln Lys Trp Arg Leu  
2850                      2855                      2860

Asn Asp Val Glu Lys Asp  
2865                      2870

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<400> 16

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Pro Phe Glu Glu Gly His Thr Leu Trp Met Lys Arg Glu Lys Ile Lys  
20                      25                      30

His Leu Gln Arg Ile Leu Gln Phe His Ser Asp Glu Ser Ile Leu Met  
35                      40                      45

Ile Asp Lys Lys Leu Met Ile Ser Gly Gly Leu Glu Pro Pro Thr Phe  
50                      55                      60

Cys Val Leu Asp Arg Cys Asp Asn His Tyr Thr Thr Lys Pro Arg His  
65                      70                      75                      80

Leu Pro Pro Phe Glu Val Phe Leu Phe Val Val Ile Phe Lys Cys Glu  
85                      90                      95

Pro Ser Ser Met Asn Tyr Gly Ala Ala Asp Glu Arg Trp Ala Asn Pro  
100                      105                      110

Pro Gln Pro Val Ala Ala Ala Glu His Gly Pro Ser Phe Asp His Ser  
 115 120 125  
 Met Val Ser Glu Glu Tyr Glu His Asp Lys Lys Lys Asn Pro Ala Gln  
 130 135 140  
 Lys Glu Gly Ile Ser Phe Ser Gln Ala Leu Leu Ala Ser Gly His Glu  
 145 150 155 160  
 Lys Ser Asp Gly Lys Ile Lys Leu Thr Ala Arg Ser Phe Met Glu Val  
 165 170 175  
 Gly Gly Tyr Ala Val Phe Leu Ile Val Leu Val Tyr Asp Ser Ser Thr  
 180 185 190  
 Pro Arg Gln Lys Ser Leu Lys Thr  
 195 200

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